Alienware Alpha
Service Manual

Computer Model: Alienware Alpha
Regulatory Model: D07U
Regulatory Type: D07U001

ALIENWARE

Notes, Cautions, and Warnings

NOTE: A NOTE indicates important information that helps you make better use of your computer.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

Copyright © 2014 Dell Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. Dell™ and the Dell logo are trademarks of Dell Inc. in the United States and/or other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies.

2014 - 10

Rev. A00

Contents

Before Working Inside Your Computer....8

Before You Begin 8

Safety Instructions....8

Recommended Tools....10

After Working Inside Your Computer....11

Technical Overview....12

Inside View Of Your Computer....12

System-Board Components....13

Removing the Base Cover....14

Procedure....14

Replacing the Base Cover....16

Procedure....16

Removing the Top Cover....17

Prerequisites....17

Procedure....17

Replacing the Top Cover....19

Procedure....19

Post-requisites....19

Removing the Hard Drive....20

Prerequisites....20

Procedure....20

Replacing the Hard Drive..... 23
Procedure..... 23
Post-requisites..... 23

Removing the Bottom USB Port..... 24
Prerequisites..... 24
Procedure..... 24

Replacing the Bottom USB Port..... 28
Procedure..... 28
Post-requisites..... 28

Removing the Power-Button Board..... 29
Prerequisites..... 29
Procedure..... 29

Replacing the Power-Button Board..... 33
Procedure..... 33
Post-requisites..... 33

Removing the Processor Fan..... 34
Prerequisites..... 34
Procedure..... 34

Replacing the Processor Fan..... 36
Procedure..... 36
Post-requisites..... 36

Removing the Processor Heat-Sink..... 37
Prerequisites..... 37
Procedure..... 37

Replacing the Processor Heat-Sink..... 39
Procedure..... 39
Post-requisites..... 39

Removing the Video-Card Fan..... 40
Prerequisites..... 40
Procedure..... 40

Replacing the Video-Card Fan..... 42
Procedure..... 42
Post-requisites..... 42

Removing the Video-Card Heat Sink..... 43
Prerequisites..... 43
Procedure..... 44

Replacing the Video-Card Heat Sink..... 45
Procedure..... 45
Post-requisites..... 45

Removing the Memory Module(s)..... 46
Prerequisites..... 46
Procedure..... 46

Replacing the Memory Module(s)..... 48
Procedure..... 48
Post-requisites..... 49

Removing the Processor..... 50
Prerequisites..... 50
Procedure..... 50

Replacing the Processor..... 52
Procedure..... 52
Post-requisites..... 53

Removing the Front-Panel Light Board..... 54
Prerequisites..... 54
Procedure..... 54

Replacing the Front-Panel Light Board..... 57
Procedure..... 57
Post-requisites..... 57

Removing the Wireless Card..... 58
Prerequisites..... 58
Procedure..... 58

Replacing the Wireless Card..... 60
Procedure..... 60
Post-requisites..... 60

Removing the Antenna Modules..... 61
Prerequisites..... 61
Procedure..... 62

Replacing the Antenna Modules..... 64
Procedure..... 64
Post-requisites..... 64

Removing the System Board..... 65
Prerequisites..... 65
Procedure..... 66

Replacing the System Board....69
Procedure....69
Post-requisites....69

Removing the Coin-Cell Battery....71
Prerequisites....71
Procedure....71

Replacing the Coin-Cell Battery....73
Procedure....73
Post-requisites....73

System Setup....74
Overview....74
Entering System Setup....74
System Setup Options....74
Boot Sequence....80
Changing Boot Sequence for the Current Boot....80
Changing Boot Sequence for Future Boots....81
Clearing Forgotten Passwords....81
Prerequisites....82
Procedure....82
Post-requisites....84
Clearing CMOS Settings....84
Prerequisites....84
Procedure....84
Post-requisites....86

Flashing the BIOS....87

Before Working Inside Your Computer

CAUTION: To avoid damaging the components and cards, handle them by their edges and avoid touching pins and contacts.

NOTE: The images in this document may differ from your computer depending on the configuration you ordered.

Before You Begin

1. Save and close all open files and exit all open applications.
2. Shut down your computer.
   - Windows 8.1: On the **Start** screen, click or tap the power icon → **Shut down**.
   - Console Mode: On the **Home** screen, click **Power** → **SHUT DOWN**.

   NOTE: If you are using a different operating system, see the documentation of your operating system for shut-down instructions.
3. Disconnect your computer and all attached devices from their electrical outlets.
4. Disconnect all cables such as telephone cables, network cables and so on, from your computer.
5. Disconnect all attached devices and peripherals, such as keyboard, mouse, monitor, and so on, from your computer.
6. Remove any media card and optical disc from your computer, if applicable.
7. After the computer is unplugged, press and hold the power button for 5 seconds to ground the system board.

Safety Instructions

Use the following safety guidelines to protect your computer from potential damage and ensure your personal safety.

⚠ **WARNING: Before working inside your computer, read the safety information that shipped with your computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.**

⚠ **WARNING: Disconnect all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting to the power source.**

△ **CAUTION: To avoid damaging the computer, make sure that the work surface is flat and clean.**

△ **CAUTION: To avoid damaging the components and cards, handle them by their edges and avoid touching pins and contacts.**

△ **CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that shipped with the product or at dell.com/regulatory_compliance.**

△ **CAUTION: Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity, which could harm internal components.**

△ **CAUTION: When you disconnect a cable, pull on its connector or on its pull-tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, make sure that the ports and connectors are correctly oriented and aligned.**

△ **CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.**

CAUTION: Press and eject any installed card from the media-card reader.

Recommended Tools

The procedures in this document may require the following tools:

- Philips screwdriver
- Flat-head screwdriver
- Plastic scribe

After Working Inside Your Computer

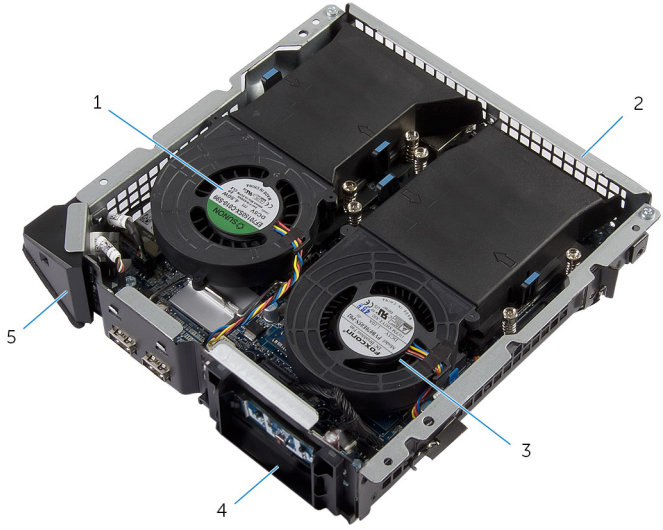
CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.

1. Replace all screws and make sure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, and cables you removed before working on your computer.
3. Replace any media cards, discs, and any other part(s) that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

Technical Overview

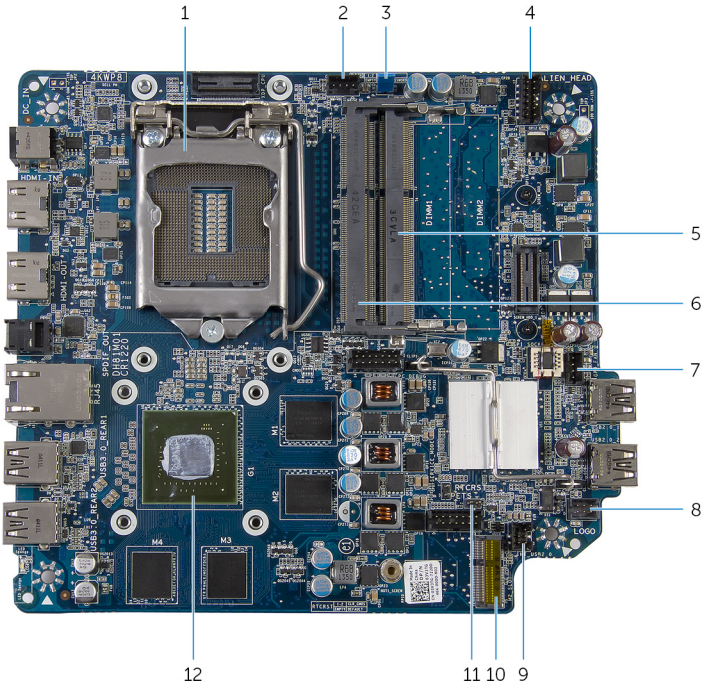
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Inside View Of Your Computer



1	video-card fan	2	back panel
3	processor fan	4	power-button module
5	front-panel light module		

System-Board Components



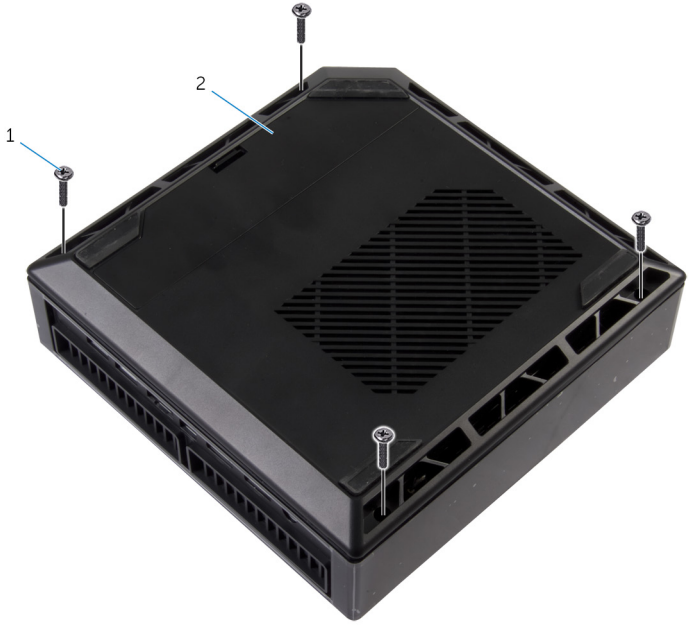
1	processor socket	2	processor-fan cable connector (CPU_FAN)
3	clear password jumper (CLEAR_PASSWORD)	4	power-button connector (ALIEN_HEAD)
5	memory-module slot (DIMM2)	6	memory-module slot (DIMM1)
7	video-card fan cable connector (GPU_FAN)	8	front-panel light board cable connector (LOGO)
9	USB-port cable connector (INT_USB2)	10	wireless-card slot
11	clear CMOS jumper (RTCRST)	12	video card

Removing the Base Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Turn the computer over.
2. Remove the screws that secure the base cover to the top cover.



1 screws (4) 2 base cover

3 Using a plastic scribe, pry the base cover off the top cover.

1 plastic scribe

2 base cover

Replacing the Base Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Align the screw holes on the base cover with the screw holes on the top cover and snap the base cover over the top cover.
2. Replace the screws that secure the base cover to the top cover.

Removing the Top Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Prerequisites

Remove the base cover.

Procedure

1 Hold the chassis along with the top cover and then turn the computer over.

2 Lift the top cover off the chassis.

1 top cover

Replacing the Top Cover

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Align the slots on the top cover with the ports on the chassis and place the top cover on the chassis.
2. Hold the chassis along with the top cover and then turn the computer over.

Post-requisites

Replace the base cover.

Removing the Hard Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.

CAUTION: To avoid data loss, do not remove the hard drive while the computer is in sleep or on state.

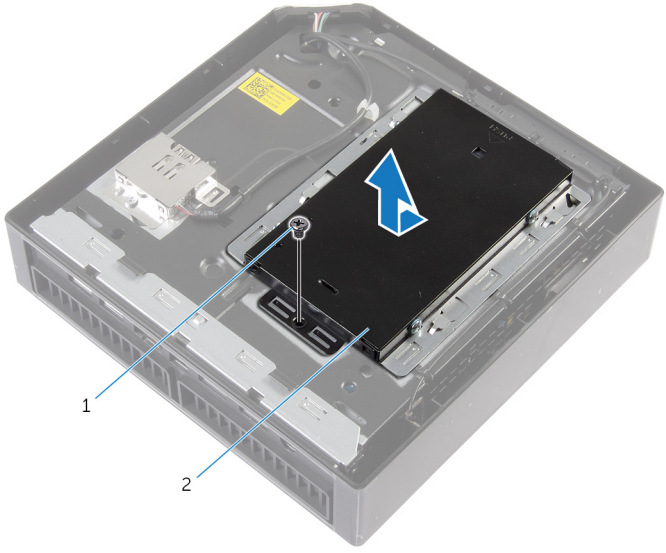
Prerequisites

Remove the base cover.

Procedure

1. Remove the screw that secures the hard-drive assembly to the chassis.
2. Slide the hard-drive assembly towards the back of the computer to disconnect the hard drive from the system board.

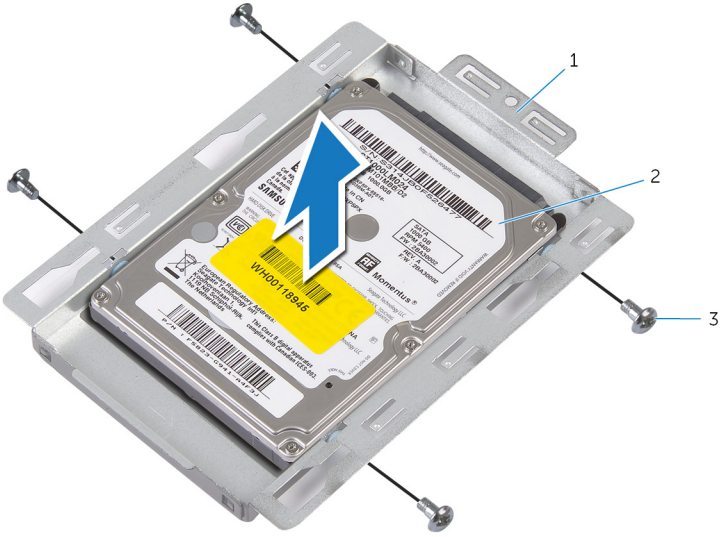
3 Lift the hard-drive assembly off the chassis.



1 screw 2 hard-drive assembly

4 Remove the screws that secure the hard-drive bracket to the hard drive.

5 Lift the hard drive off the hard-drive bracket.



1 hard-drive bracket
2 hard drive
3 screws (4)

Replacing the Hard Drive

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: Hard drives are fragile. Exercise care when handling the hard drive.

Procedure

1. Align the screw holes on the hard drive with the screw holes on the hard-drive bracket.
2. Replace the screws that secure the hard-drive bracket to the hard drive.
3. Align the slots on the hard-drive assembly with the tabs on the chassis.
4. Slide the hard-drive assembly towards the front of the computer to connect the hard drive to the system board.
5. Replace the screw that secures the hard-drive assembly to the chassis.

Post-requisites

1. Replace the top cover.
2. Replace the base cover.

Removing the Bottom USB Port

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

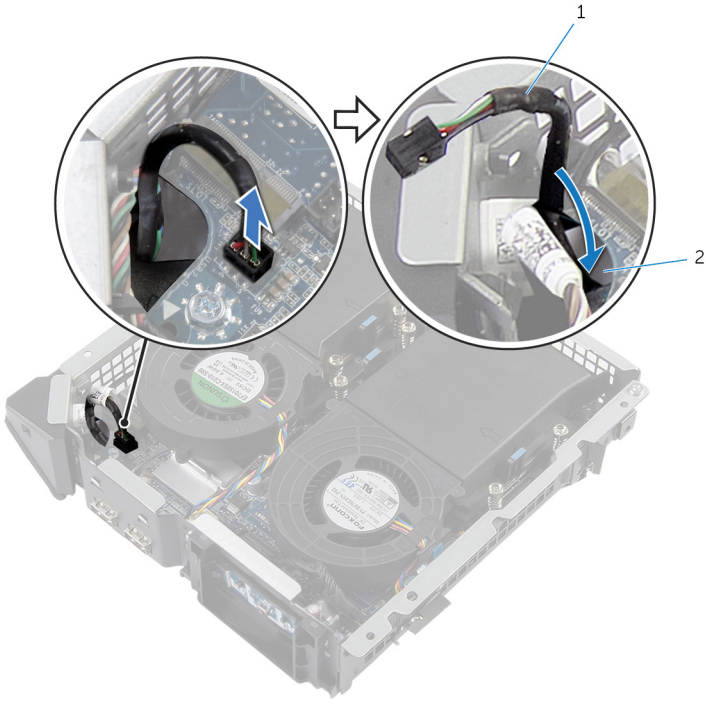
Prerequisites

1. Remove the base cover.
2. Remove the top cover.

Procedure

1. Disconnect the USB-port cable from the system board.

2 Push down the USB-port cable through the cable-routing hole on the chassis.



1 USB-port cable 2 routing hole

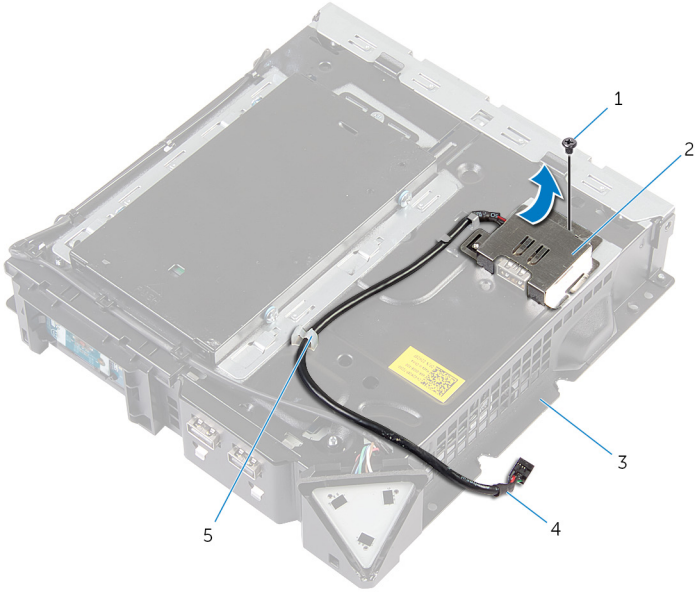
3 Turn the computer over.

4 Remove the USB-port cable from the routing guides on the chassis.

5 Remove the screw that secures the USB-port bracket to the chassis.

6 Lift the USB-port bracket at an angle to release the tabs on the USB-port bracket from the slots on the chassis.

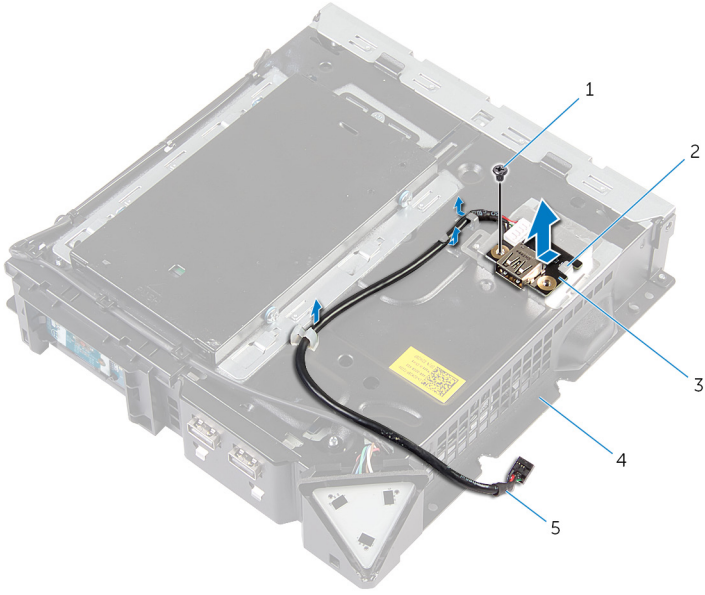
7 Lift the USB-port bracket off the chassis.



1	screw	2	USB-port bracket
3	chassis	4	USB-port cable
5	routing guides		

8 Remove the screw that secures the USB port to the chassis.

9 Slide and remove the USB port, along with the cable, from under the tab on the chassis.



1	screw	2	tab
3	USB port	4	chassis
5	USB-port cable		

Replacing the Bottom USB Port

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Slide the USB port under the tab on the chassis.
2. Replace the screw that secures the USB port to the chassis.
3. Align and slide the tabs on USB-port bracket in the slots on the chassis.
4. Replace the screw that secures the USB-port bracket to the chassis
5. Route the USB-port cable through the routing guides on the chassis and slide the cable through the cable-routing hole on the chassis.
6. Turn the computer over.
7. Connect the USB-port cable to the system board.

Post-requisites

1. Replace the top cover.
2. Replace the base cover.

Removing the Power-Button Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

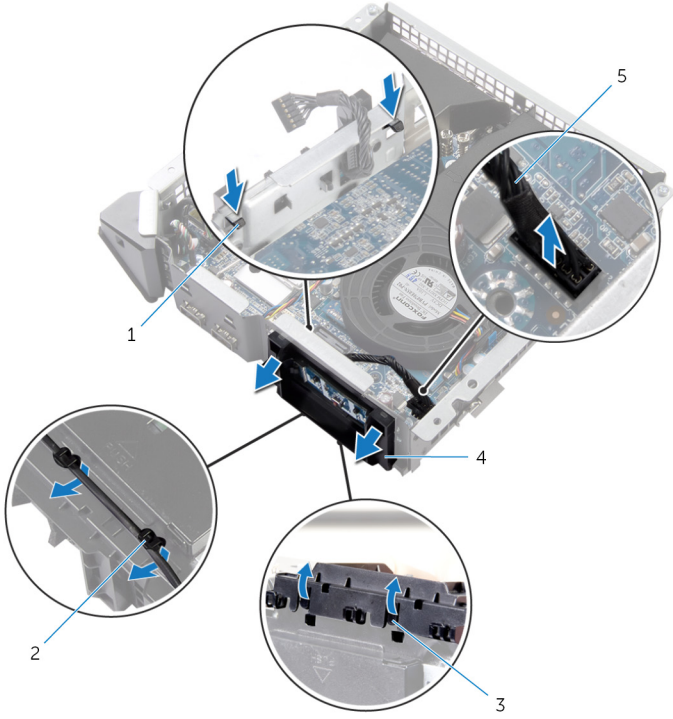
Prerequisites

1. Remove the base cover.
2. Remove the top cover.

Procedure

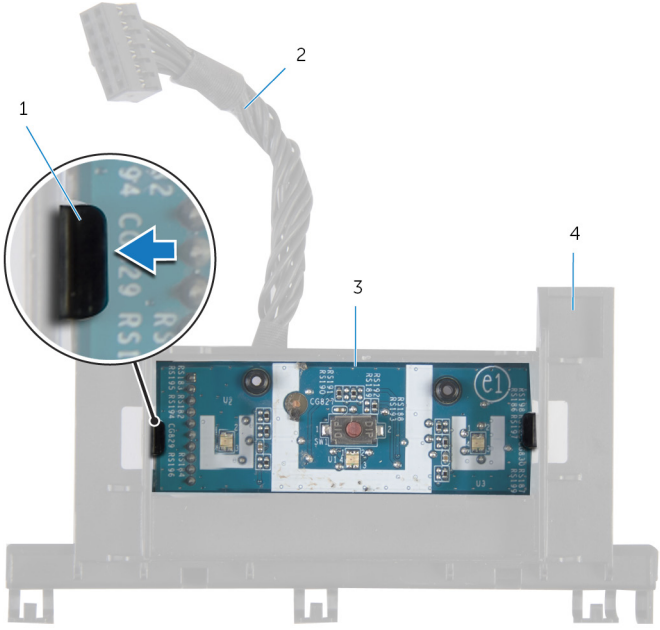
1. Disconnect the power-button board cable from the system board.
2. Turn the chassis over and remove the antenna cable from the routing guides on the power-button module.
3. Press the tabs on the power-button module to release the module from the front panel.
4. Release the tabs at the bottom of the power-button module from the slots on the chassis.

5 Remove the power-button module along with its cable through the slot on the front panel.



1	tabs (2)	2	routing guides
3	tabs (2)	4	power-button module
5	power-button board cable		

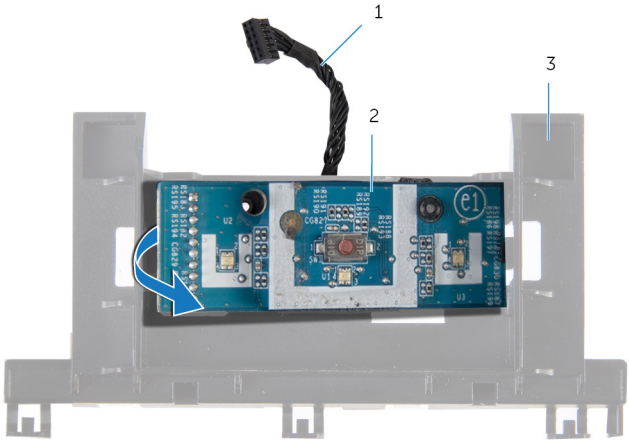
6 Push the tab that secures the power-button board to the power-button board bracket.



1	tab	2	power-button board cable
3	power-button board	4	bracket

7 Lift and slide the power-button board to release it from the power-button board bracket.

8 Remove the power-button board along with its cable off the power-button board bracket.



1	power-button board cable	2	power-button board
3	bracket		

Replacing the Power-Button Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Use the alignment posts on power-button board bracket to align the power-button board into the slot on the power-button board bracket.
2. Snap the power-button board in place on the power-button board bracket.
3. Route the power-button board cable through the cable-routing hole on the chassis.
4. Align and snap the power-button module into the slot on the front panel.
5. Connect the power-button board cable to the system board.
6. Turn over the chassis and route the antenna cable through the routing guides on the power-button board module.

Post-requisites

1. Replace the top cover.
2. Replace the base cover.

Removing the Processor Fan

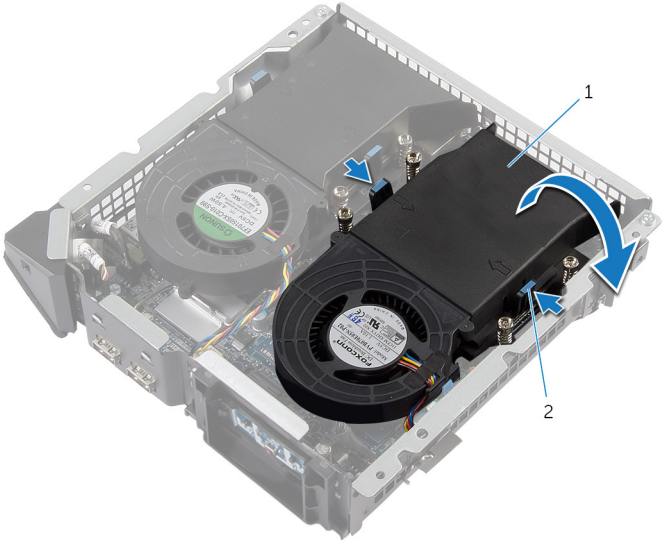
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover.
2. Remove the top cover.

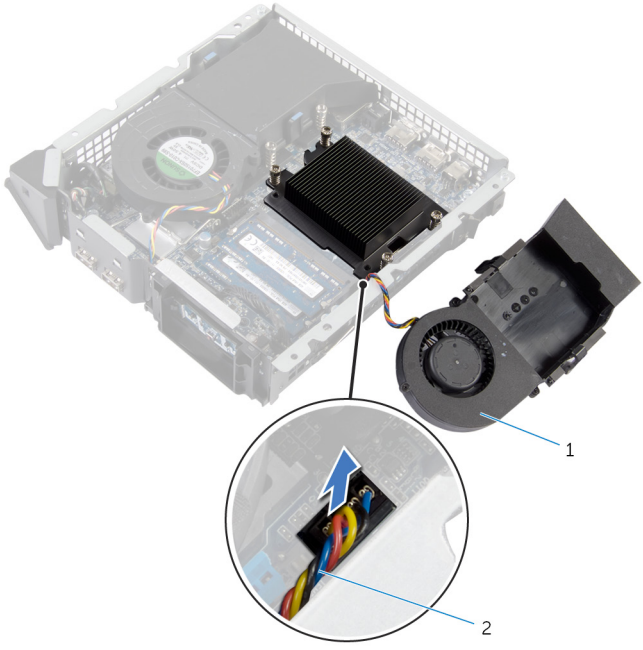
Procedure

1. Press the tabs and lift the processor fan off the system board.



1 processor fan 2 tabs (2)

2 Disconnect the processor-fan cable from the system board.



1 processor fan

2 processor-fan cable

Replacing the Processor Fan

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Connect the processor-fan cable to the system board.
2. Align and snap the processor fan over the processor heat sink.

Post-requisites

1. Replace the top cover.
2. Replace the base cover.

Removing the Processor Heat-Sink

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

Prerequisites

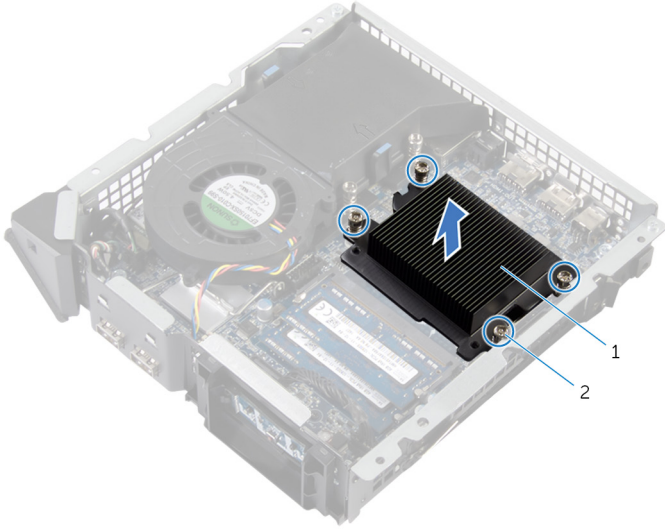
1. Remove the base cover.
2. Remove the top cover.
3. Remove the processor fan.

Procedure

NOTE: The original thermal grease can be reused if the original processor and heat sink are reinstalled together. If either the processor or the heat sink is replaced, use the thermal grease provided in the kit to make sure that thermal conductivity is achieved.

1. Loosen the captive screws that secure the processor heat sink to the system board.

2 Lift the processor heat sink off system board.



1 processor heat sink 2 captive screws (4)

Replacing the Processor Heat-Sink

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

Procedure

CAUTION: Incorrect alignment of the heat sink may damage the system board and processor.

NOTE: The original thermal grease can be reused if the original processor and heat sink are reinstalled together. If either the processor or the heat sink is replaced, use the thermal grease provided in the kit to make sure that thermal conductivity is achieved.

1. Place the processor heat sink over the processor.
2. Align the captive screws on the processor heat sink with the screw holes on the system board.
3. Tighten the captive screws that secure the processor heat sink to the system board.

Post-requisites

1. Replace the processor fan.
2. Replace the top cover.
3. Replace the base cover.

Removing the Video-Card Fan

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

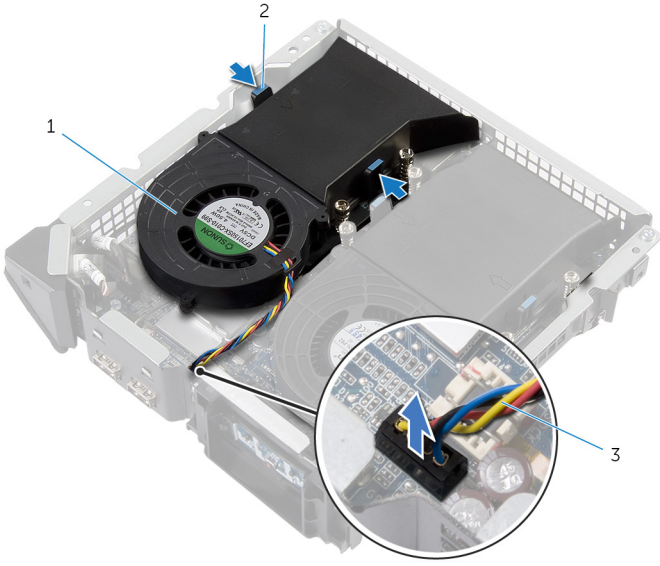
Prerequisites

1. Remove the base cover.
2. Remove the top cover.

Procedure

1. Disconnect the video-card fan cable from the system board.

2 Press the tabs and lift the video-card fan off the system board.



1 video-card fan

2 tabs (2)

3 video-card fan cable

Replacing the Video-Card Fan

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Align and snap the video-card fan over the video-card heat sink.
2. Connect the video-card fan cable to the system board.

Post-requisites

1. Replace the top cover.
2. Replace the base cover.

Removing the Video-Card Heat Sink

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

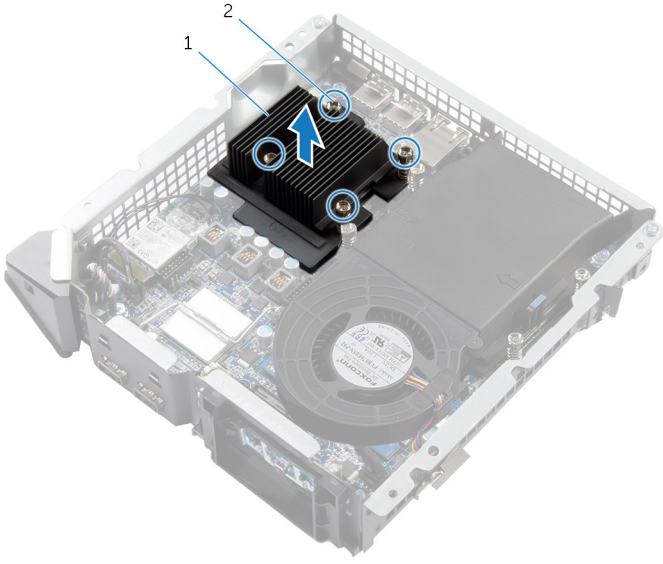
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the video-card fan.

Procedure

NOTE: The original thermal grease can be reused if the original video card and heat sink are reinstalled together. If either the video card or the heat sink is replaced, use the thermal grease provided in the kit to make sure that thermal conductivity is achieved.

1 In sequential order (indicated on the heat sink), loosen the captive screws that secure the video-card heat sink to the system board.



1 video-card heat sink 2 captive screws (4)

2 Lift the video-card heat sink off the video-card heat sink.

Replacing the Video-Card Heat Sink

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

Procedure

CAUTION: Incorrect alignment of the heat sink may damage the system board and video card.

NOTE: The original thermal grease can be reused if the original video card and heat sink are reinstalled together. If either the video card or the heat sink is replaced, use the thermal grease provided in the kit to make sure that thermal conductivity is achieved.

1. Place the heat sink over the video card.
2. Align the captive screws on the video-card heat sink with the screw holes on the system board.
3. In sequential order (indicated on the heat sink), tighten the captive screws that secure the video-card heat sink to the system board.

Post-requisites

1. Replace the video-card fan.
2. Replace the top cover.
3. Replace the base cover.

Removing the Memory Module(s)

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

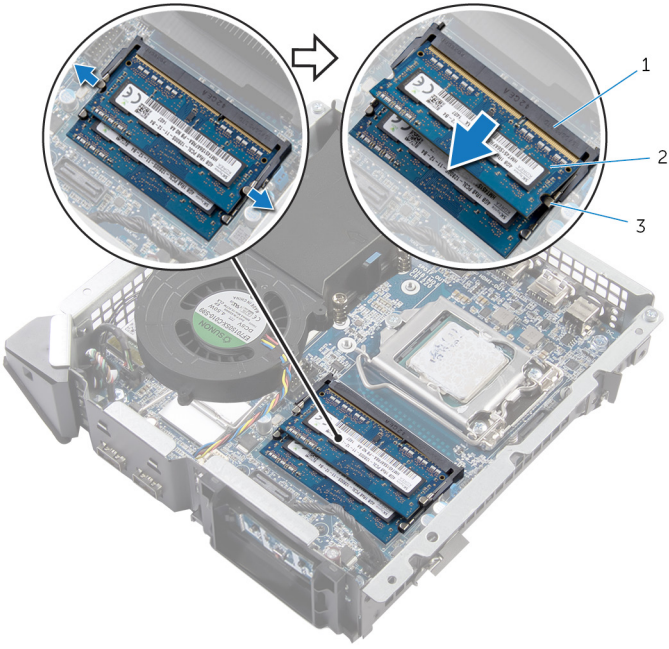
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the processor fan.

Procedure

1. Using your fingertips, pry apart the securing clips on each end of the memory-module slot until the memory module pops up.

2 Slide and remove the memory module from the memory-module slot.



1 memory-module slot
2 memory module
3 securing clips (2)

Replacing the Memory Module(s)

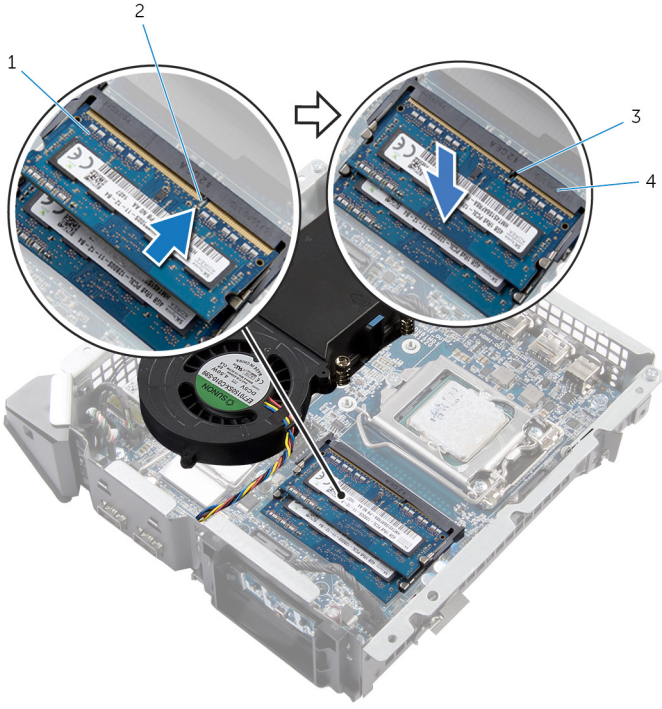
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1 Align the notch on the memory module with the tab on the memory-module slot.

2 Slide the memory module into the memory-module slot and press the memory module down until it clicks into place.

NOTE: If you do not hear the click, remove the memory module and reinstall it.



1	memory module	2	notch
3	tab	4	memory-module slot

Post-requisites

1 Replace the processor fan.
2 Replace the top cover.
3 Replace the base cover.

Removing the Processor

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

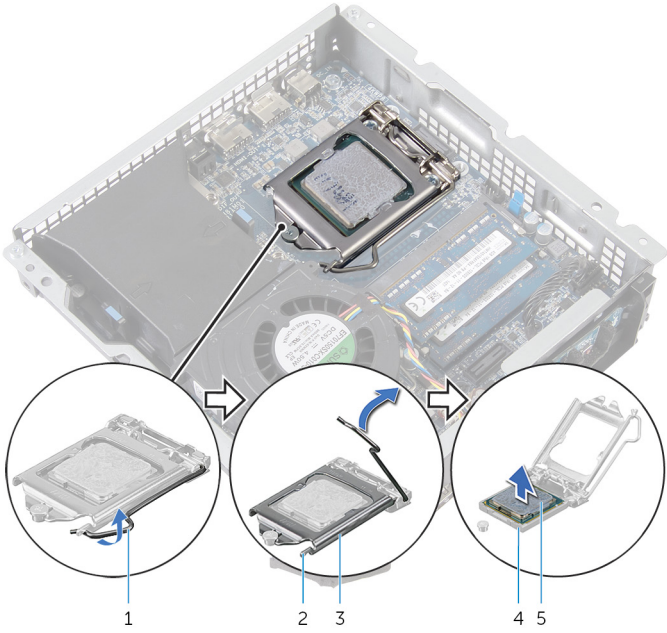
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the processor fan.
4. Remove the processor heat sink.

Procedure

1. Press the release lever down and then push it away from the processor to release it from the tab.
2. Extend the release lever completely and open the processor cover.

3 Lift the processor off the processor socket.



1	release lever	2	tab
3	processor cover	4	processor socket
5	processor		

Replacing the Processor

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: If either the processor or the heat sink is replaced, use the thermal grease provided in the kit to make sure that thermal conductivity is achieved.

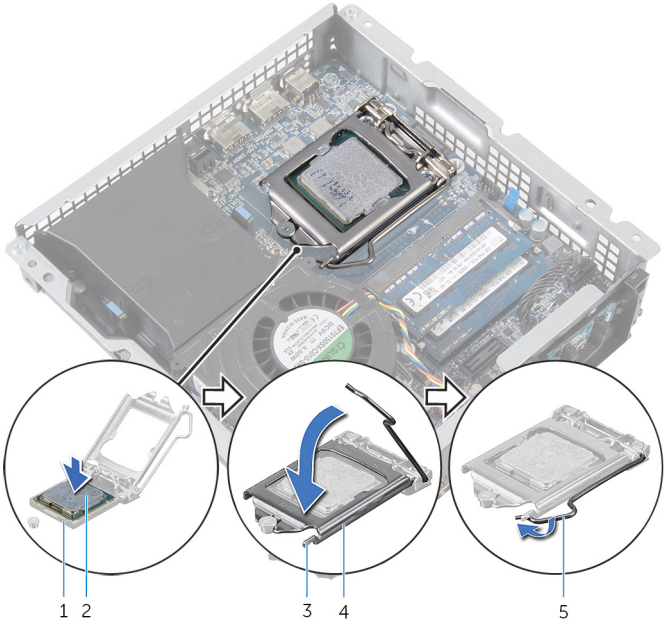
Procedure

1. Make sure that the release lever on the processor socket is fully extended and the processor cover is fully open.

   CAUTION: Position the processor correctly in the processor socket to avoid permanent damage to the processor.
2. Align the notches on the processor with the tabs on the processor socket.
3. Align the pin-1 corner on the processor with the pin-1 corner on the processor socket, and then place the processor in the processor socket.

   CAUTION: Make sure that the processor-cover notch is positioned underneath the alignment post.
4. When the processor is fully seated in the socket, close the processor cover.

5 Pivot the release lever down and place it under the tab on the processor cover.



1	processor socket	2	processor
3	tab	4	processor cover
5	release lever		

Post-requisites

1 Replace the processor heat sink.
2 Replace the processor fan.
3 Replace the top cover.
4 Replace the base cover.

Removing the Front-Panel Light Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

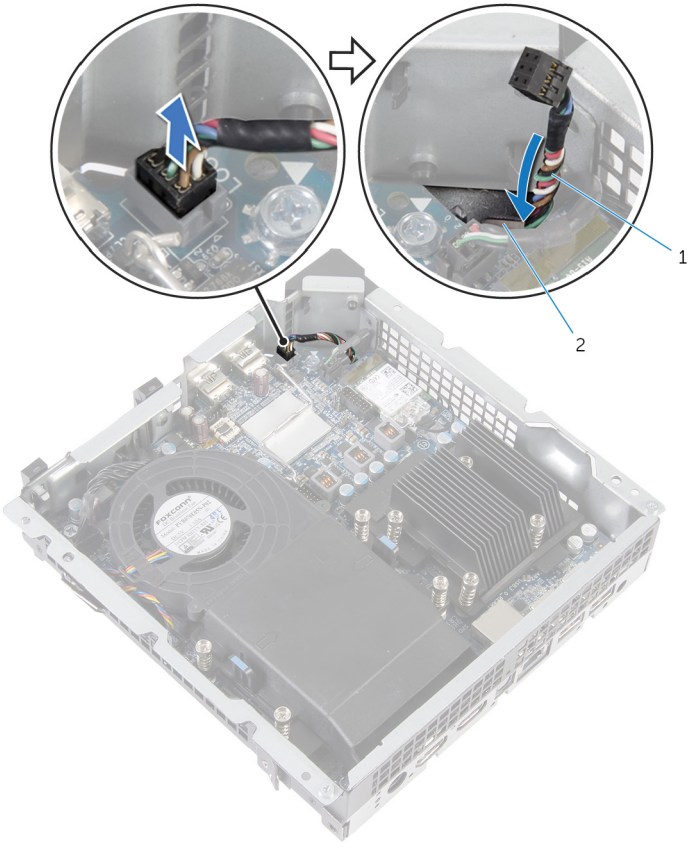
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the video-card fan.

Procedure

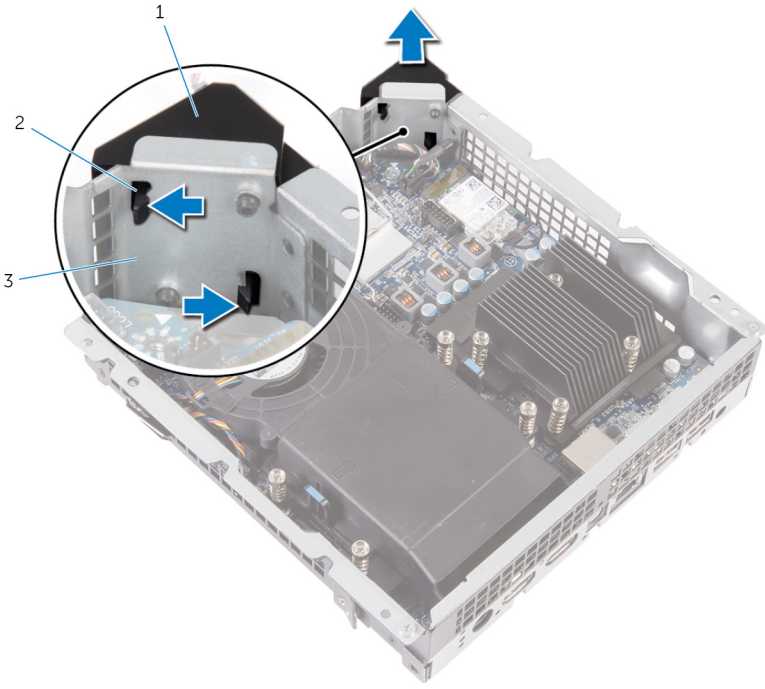
1. Disconnect the front-panel light board cable from the system board.

2 Slide the front-panel light board cable through the routing-hole on the chassis.



1 front-panel light board cable 2 routing hole

3 Press the front-panel light module tabs to release the module from the front panel.



1 front-panel light module 2 tabs

3 front panel

4 Lift the front-panel light module, along with its cable, off the front panel.

Replacing the Front-Panel Light Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Align the tabs on the front-panel light module with the slots on the front panel, and snap the front-panel light module onto the front panel.
2. Route the front-panel light board cable through the cable-routing hole on the chassis.
3. Connect the front-panel light board cable to the system board.

Post-requisites

1. Replace the video-card fan.
2. Replace the top cover.
3. Replace the base cover.

Removing the Wireless Card

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

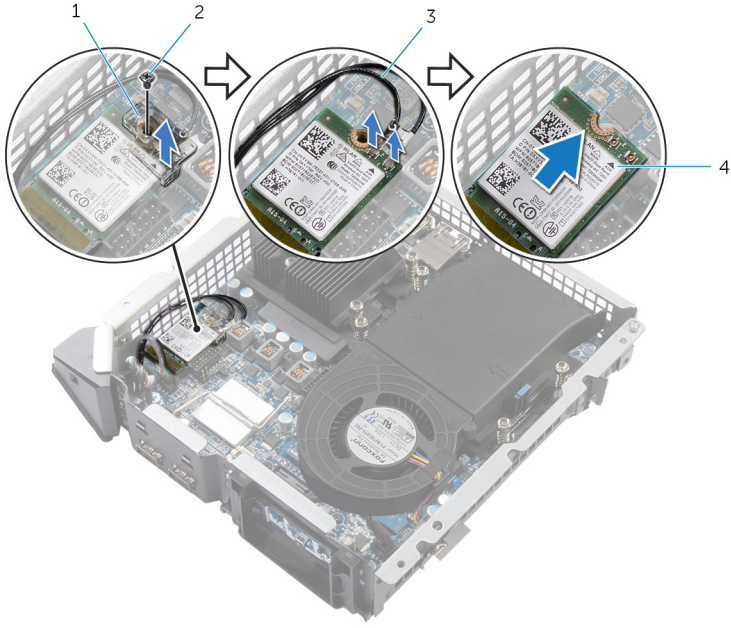
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the video-card fan.

Procedure

1. Remove the screw that secures the wireless card to the system board.
2. Lift the protective cover off the wireless card.
3. Disconnect the antenna cables from the wireless card.

4 Slide and remove the wireless card out of the wireless-card slot.



1	protective cover	2	screw
3	antenna cables (2)	4	wireless card

Replacing the Wireless Card

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

CAUTION: To avoid damage to the wireless card, do not place any cables under it.

1. Align the notch on the wireless card with the tab on the wireless-card slot.
2. Connect the antenna cables to the wireless card.

   A label at the tip of the antenna cables indicates color scheme for the wireless card supported by your computer.

Connectors on the wireless card	Antenna-cable sticker color
Auxiliary (1)	White
Main (2)	Black

3. Slide the wireless card at an angle into the wireless-card slot.
4. Press the other end of the wireless card down and replace the protective cover on the wireless card.
5. Replace the screw that secures the wireless card to the system board.

Post-requisites

1. Replace the video-card fan.
2. Replace the top cover.
3. Replace the base cover.

Removing the Antenna Modules

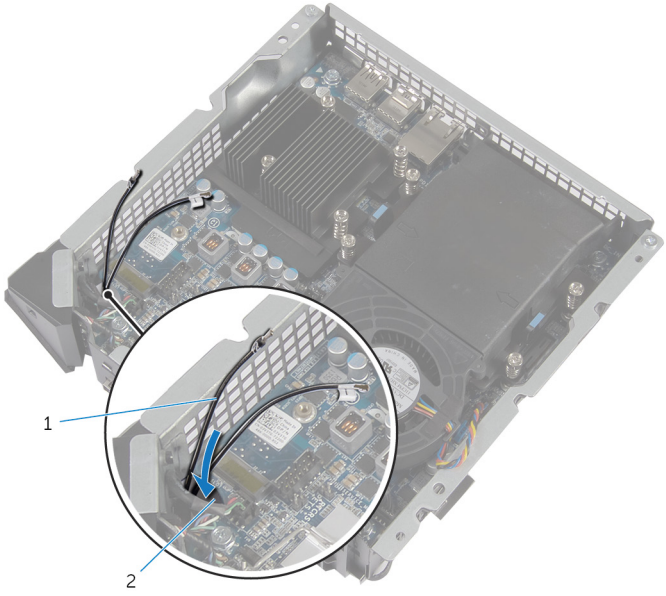
WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the video-card fan.
4. Remove the wireless card.

Procedure

1 Slide the antenna cables through the cable-routing hole on the chassis.



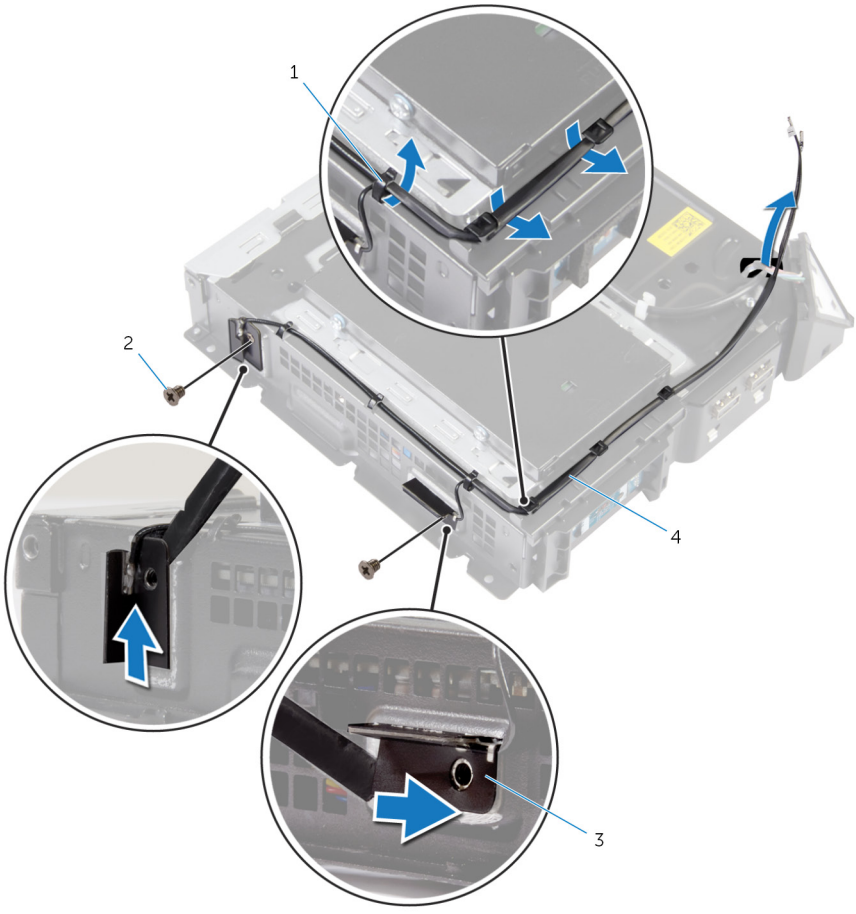
1 antenna cables (2) 2 routing hole

2 Turn the computer over.

3 Remove the antenna cable from the routing guides on the power-button module and chassis.

4 Remove the screws that secure the antenna modules to the chassis.

5 Using a plastic scribe, pry and slide the antenna modules, and release the tabs on the antenna modules from the slots on the chassis.



1	routing guides	2	screws (2)
3	antenna modules (2)	4	antenna cable

6 Lift the antenna modules, along with the cable, off the chassis.

Replacing the Antenna Modules

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Align and slide the tabs on the antenna modules in the slots on the chassis.
2. Align the screw holes on the antenna modules with the screws hole on the chassis.
3. Replace the screws that secure the antenna modules to the chassis.
4. Route the antenna cable through the routing guides on the chassis and power-button module.
5. Route the antenna cable through the cable-routing hole on the chassis.

Post-requisites

1. Replace the wireless card.
2. Replace the video-card fan.
3. Replace the top cover.
4. Replace the base cover.

Removing the System Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the desired changes again after you replace the system board.

NOTE: Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect them correctly after you replace the system board.

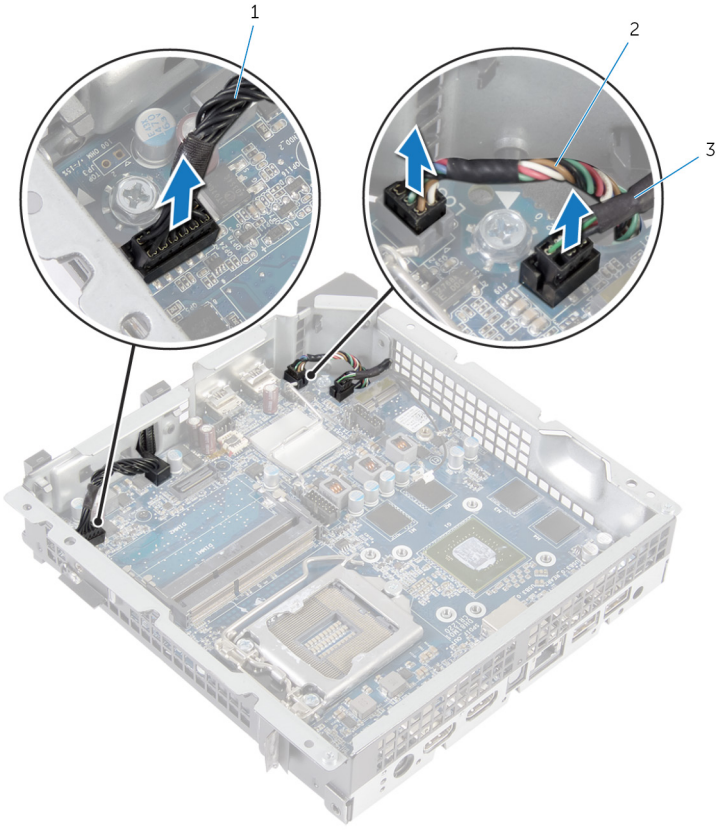
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the hard drive.
4. Remove the processor fan.
5. Remove the processor heat sink.
6. Remove the processor.
7. Remove the video-card fan.
8. Remove the video-card heat sink.
9. Remove the memory modules.
10. Remove the wireless card.

Procedure

1 Disconnect the USB-port cable, front-panel light board cable, and power-button board cable from the system board.

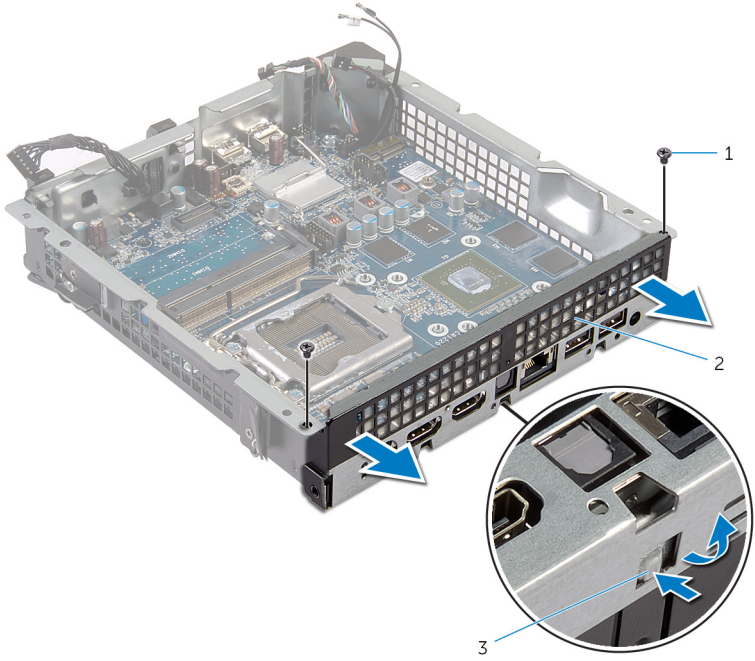
For information on the location of connectors, see "System- Board Components".



1	power-button board cable	2	front-panel light board cable
3	USB-port cable		

2 Remove the screws that secure the back panel to the chassis.

3 Push the tab at the bottom of the back panel and remove the back panel from the chassis.

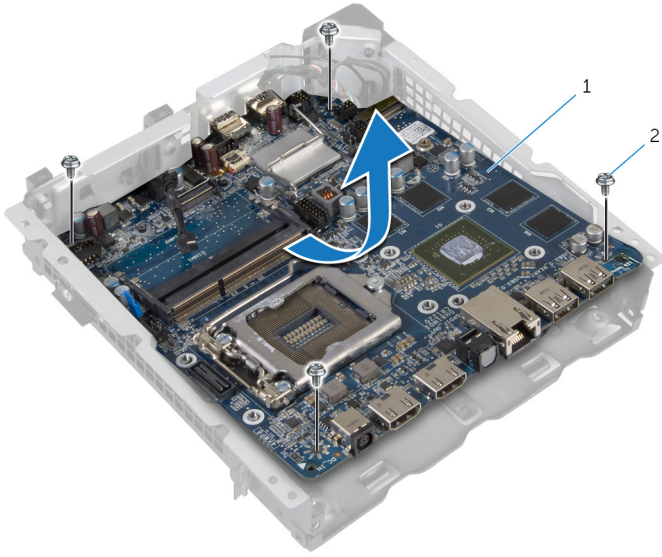


1 screws (2) 2 back panel

3 tab

4 Remove the screws that secure the system board to the chassis.

5 Lift the system board at an angle and remove it from the chassis.



1 system board

2 screws (4)

Replacing the System Board

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the desired changes again after you replace the system board.

Procedure

NOTE: Make sure that no cables are under the system board.

1. Slide the system board into the slot on the chassis and align the screw holes on the system board with the screw holes on the chassis.
2. Replace the screws that secure the system board to the chassis.
3. Align and snap the back panel onto the chassis.
4. Align the screw holes on the back panel with the screw holes on the chassis and replace the screws that secure the back panel to the chassis.
5. Connect the USB-port cable, front-panel light board cable, and power-button board cable to the system board.

   For more information on the location of connectors, see "System-Board Components".

Post-requisites

1. Replace the wireless card.
2. Replace the memory modules.
3. Replace the video-card heat sink.
4. Replace the video-card fan.

5 Replace the processor.
6 Replace the processor heat sink.
7 Replace the processor fan.
8 Replace the hard drive.
9 Replace the top cover.
10 Replace the base cover.

Removing the Coin-Cell Battery

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

CAUTION: Removing the coin-cell battery resets the BIOS settings to default. It is recommended that you note the BIOS settings before removing the coin-cell battery.

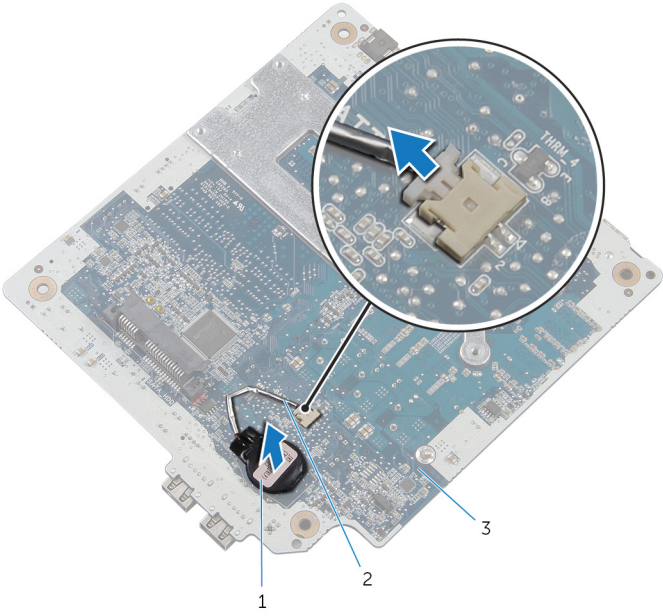
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the hard drive.
4. Remove the processor fan.
5. Remove the processor heat sink.
6. Remove the processor.
7. Remove the video-card fan.
8. Remove the video-card heat sink.
9. Remove the memory modules.
10. Remove the wireless card.
11. Remove the system board.

Procedure

1. Turn the system board over.
2. Disconnect the coin-cell battery cable from the system board.

3 Peel off the coin-cell battery from the system board.



1 coin-cell battery

2 coin-cell battery cable

3 system board

Replacing the Coin-Cell Battery

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

Procedure

1. Adhere the coin-cell battery to the system board.
2. Connect the coin-cell battery cable to the system board.

Post-requisites

1. Replace the system board.
2. Replace the wireless card.
3. Replace the memory modules.
4. Replace the video-card heat sink.
5. Replace the video-card fan.
6. Replace the processor.
7. Replace the processor heat sink.
8. Replace the processor fan.
9. Replace the hard drive.
10. Replace the top cover.
11. Replace the base cover.

System Setup

Overview

CAUTION: Unless you are an expert computer user, do not change the settings in the system setup program. Certain changes can make your computer work incorrectly.

NOTE: Before you change system setup, it is recommended that you write down the system setup screen information for future reference.

Use system setup to:

- Get information about the hardware installed in your computer, such as the amount of RAM, the size of the hard drive, and so on.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, enabling or disabling base devices, and so on.

Entering System Setup

NOTE: You must connect a keyboard and mouse to access and configure system setup.

1. Turn on (or restart) your computer.
2. During POST, when the Dell logo is displayed, watch for the F2 prompt to appear and then press F2 immediately.

   NOTE: The F2 prompt indicates that the keyboard has initialized. This prompt can appear very quickly, so you must watch for it, and then press F2. If you press F2 before the F2 prompt, this keystroke is lost. If you wait too long and the operating system logo appears, continue to wait until you see the operating system's desktop. Then, turn off your computer and try again.

System Setup Options

NOTE: Depending on your computer and its installed devices, the items listed in this section may or may not appear.

Main	
BIOS Revision	Displays the BIOS version number.
BIOS Build Date	Displays the BIOS release date.
System Name	Displays the system name.
System Time	Displays the current time in hh:mm:ss format.
System Date	Displays the current date in mm/dd/yyy format.
Service Tag	Displays the service tag of your computer.
Service Tag Input	Allows you to enter the service tag of your computer.
Asset Tag	Displays the asset tag of your computer.
Processor Information	
Processor Type	Displays the processor type.
Processor ID	Displays the processor identification code.
Processor Core Count	Displays the number of cores in the processor.
Processor L1 Cache	Displays the processor L1 cache size.
Processor L2 Cache	Displays the processor L2 cache size.
Processor L3 Cache	Displays the processor L3 cache size.
Memory Information	
Memory Installed	Displays the total computer memory.
Memory Available	Displays the amount of memory available on the computer.
Memory Running Speed	Displays the memory speed.
Memory Technology	Displays the type of memory technology used.
SATA Information	

Main	
SATA 1	Displays the device connected to SATA Port1.
Device Type	Displays the type of the connected device.
Device ID	Displays the identification code of the device.
Device Size	Displays the size of the device.

Advanced	
Processor Configuration	
Intel Hyper-Threading Technology	Allows you to enable or disable the HyperThreading in the processor.
Intel(R) SpeedStep Technology	Allows you to enable or disable Intel (R) SpeedStep Technology. **NOTE:** If enabled, the processor clock speed and core voltage are adjusted dynamically based on the processor load.
Intel(R) Virtualization Technology	Allows you to enable or disable Intel Virtualization Technology feature for the processor.
CPU XD Support	Allows you to enable the Execute Disable mode of the processor.
Limit CPUID Value	Allows you to limit the maximum value the processor standard CPUID function supports.
Multi Core Support	Allows you to enable or disable multi-core processor.
Intel(R) Turbo Boost Technology	Allows you to enable or disable Intel Turbo Boost Technology mode for the processor.
USB Configuration	
Front USB Ports	Allows you to enable or disable the front USB ports.

Advanced	
Rear USB Ports	Allows you to enable or disable the rear USB ports.
Onboard Device Configuration	
Onboard Audio Controller	Allows you to enable or disable the onboard audio controller.
SATA Mode	Displays the SATA mode on your computer.
Onboard LAN Controller	Allows you to enable or disable the onboard LAN controller.
Onboard LAN Boot ROM	Allows you to boot your computer from a network.

Boot	
Numlock Key	Allows you to set the status of the Num Lock key during boot to On or Off.
Secure Boot	Allows you to enable or disable the secure boot control.
Load Legacy OPROM	Allows you to enable or disable the Legacy Option ROM.
Keyboard Errors	Allows you to enable or disable the display of keyboard-related errors during boot.
USB Boot Support	Allows you to enable or disable booting from USB mass storage devices such as external hard drive, optical drive, USB drive, and so on.
Boot Mode	
Boot Option #1	Displays the first boot device. Default: UEFI: Windows Boot Manager.
Boot Option #2	Displays the second boot device. Default: USB Storage Device.
Boot Option #3	Displays the third boot device. Default: Internal ODD Devices.

Boot	
Boot Option #4	Displays the fourth boot device. Default: USB Floppy Device.
Boot Option #5	Displays the fifth boot device. Default: Onboard NIC Device.
Hard Disk Drivers	Displays the boot sequence of the hard drive.

Power	
Wake Up by Integrated LAN	Allow the computer to be powered on by special LAN signals.
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled.
AC Recovery	Sets what action the computer takes when power is restored.
Auto Power On	Allows you to enable or disable the computer from turning on automatically.
Auto Power On Mode	Allows you to set the computer to turn on automatically every day or on a preselected date. This option can be configured only if the Auto Power On mode is set to Enabled Everyday or Selected Day .
Auto Power On Date	Allows you to set the date on which the computer must turn on automatically. This option can be configured only if the Auto Power On mode is set to Enabled 1 to 31.
Auto Power On Time	Allows you to set the time at which the computer must turn on automatically. This option can be configured only if the Auto Power On mode is set to Enabled hh:mm:ss.

Security	
Supervisor Password	Displays whether the supervisor password is set.
User Password	Displays whether the user password is set.
Set Supervisor Password	Allows you to set, change, or delete the supervisor password. The supervisor password controls access to the system setup utility. **NOTE:** Deleting the supervisor password deletes the user password. Set the supervisor password before setting the user password.
User Access Level	Allows you to restrict or provide access to the system setup utility. ▪ No Access: Restricts users from editing system setup options ▪ View Only: Allows users to only view system setup options ▪ Limited: Allows users to edit limited system setup options ▪ Full Access: Allows users to edit all system setup options except the supervisor password
Set User Password	Allows you to set, change, or delete the user password.
Password Check	Allows you to enable password verification either when you attempt to enter system setup or each time the computer boots. **NOTE:** Password Check option is visible only when the user password is set.

Exit	
Save Changes and Reset	Allows you to exit system setup and save your changes.
Discard Changes and Reset	Allows you to exit system setup and load previous values for all system setup options.
Load Defaults	Allows you to load default values for all system setup options.

Boot Sequence

This feature allows you to change the sequence of devices that your computer attempts to boot from. If the computer cannot boot from the device you select, it attempts to boot from the next bootable device. You can use this feature to change the:

- Current Boot Sequence — change the boot sequence for the current boot, for example, to boot from the optical drive to run Dell Diagnostics from the Drivers and Utilities disc or to reinstall your operating system using an external media. The previous boot sequence is restored at the next boot.
- Future Boot Sequence — change the boot sequence for all future boots, for example, to boot from the primary hard drive.

Changing Boot Sequence for the Current Boot

1. If you are booting from a USB device, connect the USB device to a USB port.
2. Turn on (or restart) your computer.
3. When **F2 Setup**, **F12 Boot Options** appear in the lower-right corner of the screen, press **F12.**

   NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the Microsoft Windows desktop. Then, shut down your computer and try again.

   The **Boot Options** appears, listing all available boot devices.
4. On the **Boot Options**, select the device you want to boot from and press Enter.

   For example, if you are booting to a USB hard drive, highlight **USB Hard Disk** and press Enter.

Boot Options

Following are the devices that your computer can boot from:

Floppy — The computer attempts to boot from the floppy disk drive. If no operating system is on the drive, the computer generates an error message.

Hard Drive — The computer attempts to boot from the primary hard drive. If no operating system is on the drive, the computer generates an error message.

CD/DVD/CD-RW Drive — The computer attempts to boot from the optical drive. If no disc is in the drive, or if the disc is not bootable, the computer generates an error message.

USB Storage Device — Insert the memory device into a USB connector and restart the computer. When **F12 Boot Options** appear in the lower-right corner of the screen, press F12. The BIOS detects the device and adds the USB flash option to the boot menu.

NOTE: To boot to a USB device, the device must be bootable. To ensure that your device is bootable, check the device documentation.

Network — The computer attempts to boot from the network. If no operating system is found on the network, the computer generates an error message.

Changing Boot Sequence for Future Boots

1. Enter system setup.

   See "Entering System Setup".
2. Use the arrow keys to highlight the **Boot** menu option and press Enter to access the menu.

   NOTE: Note your current boot sequence in case you want to restore it.
3. Navigate to **Set Boot Priority** to configure the boot priority.
4. Use the arrow keys to highlight the boot priority and press Enter to display the different devices.
5. Select the device and press Enter to set the boot priority.

Clearing Forgotten Passwords

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

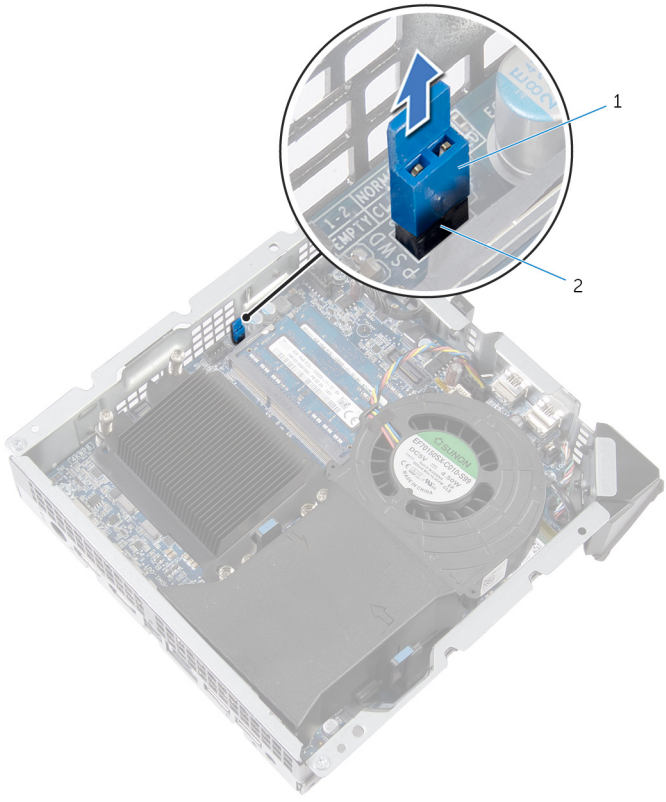
Prerequisites

1. Remove the base cover.
2. Remove the top cover.
3. Remove the processor fan.

Procedure

1. Locate the password jumper (CLEAR_PASSWORD) on the system board.
   For information on the location of the CMOS jumper, see "System- Board Components".

2 Remove the jumper plug.



1	jumper plug	2	password jumper (CLEAR_PASSWORD)

3 Replace the processor fan.
4 Replace the top cover.
5 Replace the base cover.
6 Turn on your computer and wait till the operating system is completely loaded.
7 Shut down your computer.
8 Remove the base cover.
9 Remove the top cover.
10 Remove the processor fan.

11 Replace the jumper plug on the password jumper.

1	jumper plug	2	password jumper (CLEAR_PASSWORD)

Post-requisites

1 Replace the processor fan.
2 Replace the top cover.
3 Replace the base cover.

Clearing CMOS Settings

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in Before Working Inside Your Computer. After working inside your computer, follow the instructions in After Working Inside Your Computer. For more safety best practices, see the Regulatory Compliance home page at dell.com/regulatory_compliance.

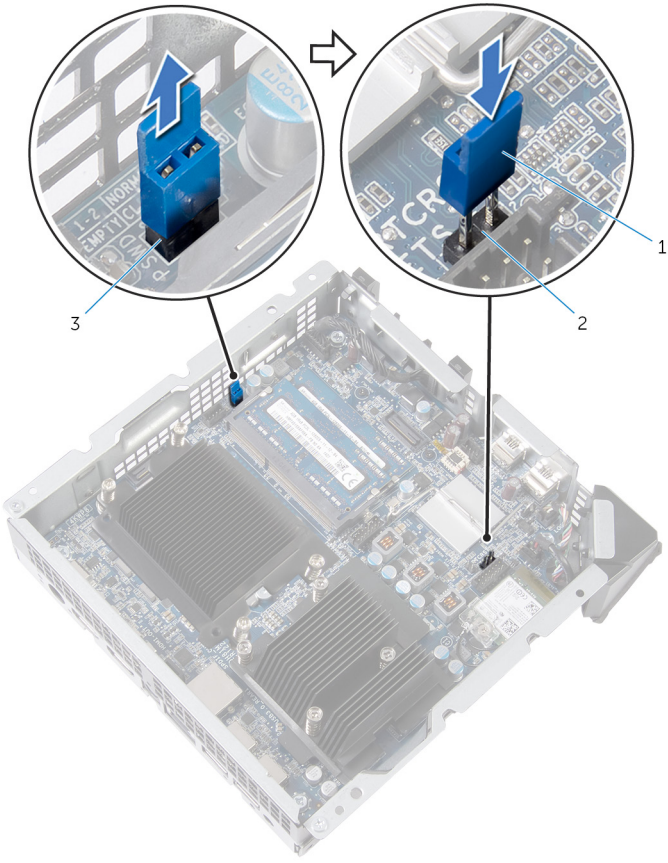
Prerequisites

1 Remove the base cover.
2 Remove the top cover.
3 Remove the processor fan.
4 Remove the video-card fan.

Procedure

1 Locate the CMOS jumper (RTCRST) on the system board.
For information on the location of the CMOS jumper, see "System- Board Components".

2 Remove the jumper plug from the password jumper (CLEAR_PASSWORD) and place it on the CMOS jumper (RTCRST).



1	jumper plug	2	CMOS jumper (RTCRST)
3	password jumper (CLEAR_PASSWORD)		

3 Replace the video-card fan.
4 Replace the processor fan.
5 Replace the top cover.
6 Replace the base cover.

7 Turn on your computer.

A message is displayed to confirm that the CMOS settings are reset and default BIOS setup has been loaded.

8 Press F1 to continue and wait till the operating system is completely loaded.

9 Shut down your computer.

10 Remove the base cover.

11 Remove the top cover.

12 Remove the processor fan.

13 Remove the video-card fan.

14 Remove the jumper plug from the CMOS jumper and replace it on the password jumper.

Post-requisites

1 Replace the video-card fan.

2 Replace the processor fan.

3 Replace the top cover.

4 Replace the base cover.

Flashing the BIOS

NOTE: It is recommended that you connect a keyboard and mouse to flash the BIOS.

You may need to flash (update) the BIOS when an update is available or when you replace the system board. To flash the BIOS:

1. Turn on the computer.
2. Go to **dell.com/support**.
3. If you have your computer's Service Tag, type your computer's Service Tag and click **Submit**.

   If you do not have your computer's Service Tag, click **Detect My Product** to allow automatic detection of the Service Tag.

   NOTE: If the Service Tag cannot be detected automatically, select your product under the product categories.
4. Click **Get Drivers and Downloads**.
5. Click **View All Drivers**.
6. In the **Operating System** drop-down, select the operating system installed on your computer.
7. Click **BIOS**.
8. Click **Download File** to download the latest version of the BIOS for your computer.
9. On the next page, select **Single-file download** and click **Continue**.
10. Save the file and once the download is complete, navigate to the folder where you saved the BIOS update file.
11. Double-click the BIOS update file icon and follow the instructions on the screen.